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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,493	09/02/2003	Yun Soo Choe	1670.1015	2730
21171	7590	06/22/2005	EXAMINER	
STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005			PAIK, SANG YEOP	
			ART UNIT	PAPER NUMBER
			3742	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/652,493

Applicant(s)

CHOE ET AL.

Examiner

Sang Y. Paik

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to because the reflective layer is not clearly illustrated in the drawing figures submitted on 12/8/04. The reference numerals showing as the reflective layer seem to point the same layer as the heat resistant layer (46 and 56 in Figures 4A and 5, respectively). Furthermore, since these drawing figures are showing the cross sectional views of the device, it is suggested that a clear cross sectional view of the reflective layer should be shown with proper cross hatching marks reflecting the type of material that the reflective layer is made of. It is also suggested that rest of the drawing figures reflect the type of material that are used for the crucial cover as well as the crucible body. The straight cross hatching marks in the drawing figures reflect a metallic material which is incorrect as the ceramic materials. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

Art Unit: 3742

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4, 7, 9, 11-13, 16-18 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow (US 5,157,240) in view of Chandler (US 2,799,764) or Isaacson et al (US 3,842,241).

Chow shows a heating crucible having a main body container, a cover formed of an insulating material such as the nitride ceramic with a nozzle, a cover heater formed as a thin film on a top surface of the cover, a body heater for heating the main body, the cover heater having a single wire pattern with the positive and negative thermals, a thermocouple in the cover, a heat-resistance layer on the cover heater, the main body also formed of an insulating material such as the nitride ceramic with a body heater as a thin film on the outer wall of the main body, the body heater having a single wire pattern with the positive and negative terminals, the body heater is also formed on the bottom portion of the main body, and a thermocouple inside the main body. However, Chow does not show a heat reflective layer between the heater and the heat-resistant layer.

Chandler or Isaacson shows that it is well known in the art to provide a heating device having a heating element provided with a heat reflective layer to direct the heat toward the

Art Unit: 3742

desired heating surface. In Chandler, it is shown that the heating element (72) is provided on a heating surface (76) with a heat reflecting layer (62) disposed between the heating element and a heat resistant/insulating layer (78). Isaacson also shows a heating surface (14) upon which a heating element (50) provided thereto with a heat reflective layer (56) disposed between the heating element and a heat resistant layer (40).

In view of Chandler or Isaacson, it would have been obvious to one of ordinary skill in the art to adapt Chow with a reflective layer provided between the heat resistant layer and the heater to reflect the heat generated by the heater toward an intended heating direction.

With respect to claim 9, Chow shows the cover having a nozzle in the center of the cover with a cover heater provided around the nozzle. However, while, Chow does not show that the cover heater concentric pattern around the nozzle, it would have been obvious to one of ordinary skill in the art to provide the cover heater in the concentric pattern or any other pattern to effectively provide uniform and stable heating across the cover.

4. Claims 3, 14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow in view of Chandler or Isaacson as applied to claims 1, 2, 4, 7, 9, 11-13, 16-18 and 20-25 above, and further in view of Kano et al (US 6,242,719).

Chow in view of Chandler or Isaacson shows the heating crucible claimed except the cover heater being platinum.

Kano shows a heating element such as platinum or graphite deposited on an insulating ceramic layer such as pyrolytic boron nitride or aluminum nitride. In view of Kano, it would have been obvious to one of ordinary skill in the art to adapt Chow, as modified by Chandler or Isaacson, with the cover heater made of platinum as an alternative conductive material that can

Art Unit: 3742

alternatively provide stable and uniform heating temperature, and with respect to claim 14, it would have been obvious to further provide insulating material made of aluminum nitride that alternatively provide a good electrical and thermally conductive material.

5. Claims 8, 15 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chow in view of Chandler or Isaacson as applied to claims 1, 2, 4, 7, 9, 11-13, 16-18 and 20-25 above, and further in view Bichrt (US 6,162,300).

Chow in view of Chandler or Isaacson shows the heating crucible claimed except the cover or the main body is made of alumina or silicon carbide

Bichrt shows a ceramic body made of alumina or silicon carbide as well as pyrolytic boron nitride. In view of Bichrt, it would have been obvious to one of ordinary skill in the art to adapt Chow, as modified by Chandler or Isaacson, with the cover and the main body made of alumina or silicon carbide in place of the pyrolytic boron nitride since such is well known in the art to alternatively provide a mechanically and thermally stable body that can withstand a temperature, pressure and chemical stress.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chow in view of Chandler or Isaacson as applied to claims 1, 2, 4, 7, 9, 11-13, 16-18 and 20-25 above, and further in view Maeda et al (US 5,233,166) or Okuda et al (US 4,804,823).

Chow in view of Chandler or Isaacson shows the heating crucible claimed except the cover heater is made of conductive paste with metal particles and metal oxides.

Maeda and Okuda show that it is known in the art to provide a conductive paste made with metal particles or metal oxides applied to a ceramic substrate to form an electrical heater. In view of Maeda or Okuda, it would have been obvious to one of ordinary skill in the art to adapt

Art Unit: 3742

Chow, as modified by Chandler or Isaacson, with the cover heater made of conductive paste having the metal particles and metal oxides to form a heating element that can provide a mechanically and thermally stable heater that can also withstand a high temperature.

Response to Arguments

7. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sang Y Paik
Primary Examiner
Art Unit 3742

S-P-2

syp